



## Analysis of the distribution of the tick *Ixodes ricinus* L. (Acari: Ixodidae) in a nature reserve of western Germany using Geographic Information Systems

**Author(s):** Schwarz A, Maier WA, Kistemann T, Kampen H  
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### Abstract:

From May to November 2003, at five selected sites of the 'Siebengebirge', a nature reserve near Bonn, Germany, data on microclimate, pedology, plant sociology and tick abundance were collected weekly and correlated. A total of 2832 host-seeking *Ixodes ricinus* (2660 nymphs and 172 adults) were collected, with maximal abundance in June and a minor second increase in abundance in August. The spatial and temporal variation in tick abundance was closely related to the air temperature, relative humidity, soil water content and specific vegetation type. Increases in tick abundances in individual habitats were most likely caused by climate change and/or anthropogenic interventions such as increased numbers of wild boar, a host of *I. ricinus*. When combined with data from previous investigations a correlation of plant communities with six semi-qualitative tick abundance categories (ranging from 'no ticks' to 'very high tick abundance') was revealed, and GIS analysis indicated that 56.5% of the 'Siebengebirge' is made up of plant communities belonging to the three highest tick abundance categories. Therefore, the risk of visitors in the 'Siebengebirge' of being exposed to tick bites and being infected by *Borrelia burgdorferi sensu lato* had increased.

**Source:** <http://dx.doi.org/10.1016/j.ijheh.2007.12.001>

### Resource Description

#### Communication: ☒

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

#### Communication Audience: ☒

audience to whom the resource is directed

Public

#### Exposure : ☒

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Meteorological Factors, Temperature

**Temperature:** Fluctuations

# Climate Change and Human Health Literature Portal

## **Geographic Feature:**

resource focuses on specific type of geography

Other Geographical Feature

**Other Geographical Feature :** Forest

## **Geographic Location:**

resource focuses on specific location

Non-United States

**Non-United States:** Europe

**European Region/Country:** European Country

**Other European Country :** Germany

## **Health Impact:**

specification of health effect or disease related to climate change exposure

Infectious Disease

**Infectious Disease:** Vectorborne Disease

**Vectorborne Disease:** Tick-borne Disease

**Tick-borne Disease:** Lyme Disease

## **Intervention:**

strategy to prepare for or reduce the impact of climate change on health

A focus of content

## **Mitigation/Adaptation:**

mitigation or adaptation strategy is a focus of resource

Adaptation

## **Resource Type:**

format or standard characteristic of resource

Research Article

## **Timescale:**

time period studied

Time Scale Unspecified

## **Vulnerability/Impact Assessment:**

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content